

Unrecorded Acari from New Zealand.
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(PLATES 17-21.)

[Read 7th November, 1907.]

My friend the late Edwin Bostock, of Tixal near Stafford, at his death, left a considerable collection of Acari, chiefly Oribatidæ, both British and foreign. The British collection has already been fully dealt with, but there has not hitherto been any attempt made to describe or illustrate the foreign species. The most important portion of these preparations consists of specimens from New Zealand; they are wholly Oribatidæ with the exception of two specimens of Gamasidæ, both most remarkable creatures. Failing health and other causes prevented Mr. Bostock from attempting to publish any account of the novelties contained in this collection during his life, but he bequeathed the collection to me. Unfortunately, other engagements and difficulties have delayed my giving them up to the present time the attention which they deserved.

Mr. Bostock was an admirable collector and preserver of Acari, and I have often had occasion to thank him for assistance in my former work; he also had a remarkable power of interesting others in his pursuits, and obtaining their help at times when and in places where he could not personally carry on his collecting. The present gathering was made partly by Mr. Bostock himself during visits to New Zealand, and partly by Mr. J. W. Baker and other residents in that country, whose assistance in collecting Mr. Bostock secured. The collection is decidedly the finest of extra-European Oribatidæ which I have yet seen. Of course a large portion of it consists of species which do not depart in any marked manner from their nearest European allies: this is only what might be expected looking at the very wide distribution of Acarine species and genera, either identical or very closely allied; but amongst them are seven or eight very remarkable species which are well worth recording, and I think that, looking at my own age and other engagements, it is most prudent to do so in the present paper rather than to wait until every specimen, whether of special interest or not, can be fully worked out.

I have often remarked in former papers that the few species of Oribatidæ with which we are at present acquainted from tropical countries are usually of smaller size and less striking appearance than those which are found in more temperate parts of the world. The collection which forms the subject of this paper is a very good example of this: the analogy of the climate of New Zealand to that of Great Britain has often been remarked upon, and

it is from thence that we now receive this collection containing species whose large size and apparent vigour would indicate at once, to a specialist acquainted with the group, their probable temperate origin; what he would also notice is that the temperate characteristics seem exaggerated, as if they had run wild, giving many of the species a very singular appearance.

I have not thought it necessary to create any new genera; probably many systematists would have done so. The creature which I propose calling *Oribata Bostocki* is a very remarkable one. The most uncommon feature of this species is that the pteromorphæ (chitinous wing-like expansions of the abdomen) are confined to the anterior margin of the abdomen and point forward, instead of running along the lateral margin of the abdomen and projecting at the sides: this is so rare that the only instance which I am acquainted with is *O. gilvipes*, C. L. Koch, a species the capture of which is seldom recorded. Some authors would probably think that a genus, or subgenus, should be founded on this character, making *O. Bostocki* the type; personally I do not think a separate generic or subgeneric name necessary, particularly as *O. Bostocki* and *O. gilvipes* are very different in other respects, *O. gilvipes* having the appearance of a typical *Oribata*, while *O. Bostocki* shows certain analogies to *Tegeocranus* and *Carabodes*.

The *Trachynotus* which I propose calling *T. sclerophyllus* is in many respects a very remarkable creature, but especially so in the chitinized leaf-shaped appendages which spring from the edge of the abdomen. It is quite common in the Acarina that some of the principal hairs on the body are placed in this situation, and these hairs are usually good specific distinctions, being practically always similar in number, position, and character in all specimens of the same species and sex; but they vary greatly in different species. It is not by any means unusual for these hairs to have assumed a flattened, leaf-like form, and to consist of a central rhachis, with branched nervures, between which is stretched a transparent flexible membrane; but for these nervures and the membrane to have become an opaque sheet of brown, rigid chitin, while retaining its leaf-like form and hair-like mode of attachment to the body, is a very exceptional development.

The species which I propose calling *Nothrus cophinarius* is an extreme form of that genus, and is another example of the curious and varied modes in which some adult Oribatidæ carry portions of the cast skins of the nymph; and that which I am calling *Notaspis spinulosa* has the serrated hairs on the notogaster carried to a development greatly in excess of anything hitherto known in the family.

I am not able to give as much detail of parts dissected off as I usually like to do in drawings of new species, but the specimens I have are all mounted in balsam, and those in preservative liquid which Mr. Bostock had provided for dissection were unfortunately destroyed in a fire which occurred after his death.

ORIBATIDÆ.

ORIBATA BOSTOCKI *, sp. n. (Pl. 17. figs. 1-3.)

Average length	. . . . .	about .9 mm.
„ breadth	. . . . .	„ .6 „
„ length of legs, 1st pair	. . . . .	„ .45 „
„ „ „ 2nd „	. . . . .	„ .36 „
„ „ „ 3rd „	. . . . .	„ .40 „
„ „ „ 4th „	. . . . .	„ .55 „

Colour dark chestnut-brown.

Texture rough and dull. The roughness is upon the epiostracum, which is easily detachable in parts, and is consequently apt to rub off partially.

Cephalothorax large, rather more than half the length of the abdomen, broadly conical. Rostrum rounded at the tip. Rostral hairs short and curved inward. *Lamellæ extremely large and almost horizontal*, joined anteriorly by a translamella, also horizontal, which is continuous with the lamellæ, and not distinctly demarcated from them; both are formed of light translucent chitin; the whole together cover the larger portion of the cephalothorax. Cusps of the lamellæ very large, projecting nearly as far as the tip of the rostrum; very broad, and deeply excavated anteriorly for the insertion of the lamellar hair, which is thick, long, and curved inward; those from the two sides generally cross. The lobe of the cusp outside the hair is generally rounded, the inner lobe pointed, but the chitin of which they are formed is thin and brittle, and the inner lobe, as well as the outer, is often rounded in captured specimens; the outer lobe may possibly also be pointed when the creature emerges, but this cannot probably be ascertained without rearing the creature. Pseudo-stigmata large, of thick rough chitin, almost hidden between the lamellæ and the wing-like projection from the abdomen. Pseudo-stigmatic organs rather long, moderately recurved, with slightly fusiform heads upon thin peduncles. Inter-lamellar hairs rod-like, slightly curved, not conspicuous; each is mounted upon an almost circular chitinous ridge. Tectopodia large and conspicuous from the dorsal aspect.

Legs of moderate length; the fourth pair pass the hind margin of the abdomen by about half the length of the tarsi. The femora of the first pair have slender peduncles to suit the deep cleft in which they are inserted; the other femora are without peduncles. The coxæ of the fourth pair of legs are pyriform, flattened, curved backward, and drawn out to a long curved point outside the lateral edges of the femora; the whole coxa thus assumes the form of a comma, or of one of the ornaments known as “pines” in Indian embroidery. Claws large and *monodactyle*. The tarsi bear numerous fine hairs, and there are a few similar hairs on most of the other joints.

* Named in honour of the memory of the discoverer.

Abdomen not longer than its width ; it has a squarish effect, but all its sides are more or less rounded, the hind margin being the most so. The principal feature of the species is a pair of large and remarkable sheets of thin translucent chitin (the pteromorphæ) which form *wing-like projections* from the *anterior margin* of the abdomen near the lateral corners. These chitinous projections are one-third the length of the whole body of the creature, and are nearly three times as long as their own greatest width ; where they start from the abdomen each projection has a width about equal to one-third of that of the abdomen ; they, however, suddenly narrow and then widen again, and eventually narrow again almost to a point ; they also curve forward and downward ; their edges are somewhat turned upward, and the whole projection is slightly twisted, like half a turn of a screw ; the form thus produced is complicated and will be best understood from the drawing. They cross above the femora and genuals of the second pair of legs and project between that pair and the first *. In the centre of the hind-margins are two small, chitinous, conical projections close together ; each bears a short hair curved inward. There is a row of about twelve thick, slightly-curved, rod-like hairs rather nearer the periphery than the centre of the notogaster.

Ventral surface. The tectopodia are large, conspicuous, and complicated. There is a large, chitinous, tooth-like projection between the first and second legs, and a smaller one on the ventral side below the second femur. The third and fourth coxæ are sunk in depressions of the ventral plate. The genital plates are placed far forward and are trapezoidal, narrowest posteriorly ; the anal plates much larger, and of an unequal diamond-shape with curved sides.

Habitat. Several specimens from Fielding (J. W. Baker's collection).

NOTASPIS SPINULOSA †, sp. n. (Pl. 18. figs. 5-10.)

Average length	about	·75 mm.
„ breadth	„	·45 „
„ length of legs, 1st pair . . .	„	·50 „
„ „ „ 2nd „ . . .	„	·45 „
„ „ „ 3rd „ . . .	„	·48 „
„ „ „ 4th „ . . .	„	·50 „

Colour chestnut-brown of medium depth.

Texture polished, but not very highly so for the genus.

Cephalothorax of medium size, not much more than a third of the length of

* This form of the pteromorpha, confined entirely to the anterior margin of the abdomen, is extremely rare ; indeed, the only instance at all approaching the present species in this respect which I know of is *O. gilvipes*, C. L. Koch. The two species might possibly form a subgenus.

† *Spinulosus*, covered with little spines (Modern Latin).

the abdomen ; broadly conical. Rostrum somewhat rounded at the tip. Rostral hairs inserted far back, finely pectinated, rather long. Lamellæ low, rough, slightly curved, irregular ridges without cusps ; they are short, considerably less than half the length of the cephalothorax ; they are about twice as far apart at the base, next the abdomen, as at their anterior ends, from which the lamellar hairs arise. These hairs are stout and long, passing the tip of the rostrum by about half their length ; they are strongly pectinated, or spinulated. Inter-lamellar hairs similar, but a trifle longer. Pseudo-stigmata small, and placed partly under the edge of the abdomen. Pseudo-stigmatic organs with rather long peduncles and small pyriform heads ; they stand forward and upward.

Legs of about average length for the genus ; the first pair pass the tip of the rostrum by about the length of the tibia and tarsus, the fourth pair pass the posterior margin by that of the tarsus only. The tibiæ are the longest joints, and in the first pair of legs have a small projection in the centre of the anterior margin, which projection bears the tactile hair. The femora, genuals, and tibiæ each carry a pair of stout, curved, spinulated hairs, and the coxæ of the third and fourth legs one similar hair. The tarsi bear several very caducous, finely pectinated or plumose hairs. The claws are tridactyle, and strong, the central claw of the three is the shortest but the thickest.

Abdomen about a tenth longer than its width, it is not round in effect but is somewhat diminished in width anteriorly, the sides there sloping in an almost straight line, and there is a tendency to a median anterior point. There are not any markings on the notogaster, but it bears a large number of extremely large, conspicuously spinulated hairs ; these hairs constitute the great feature of the species ; they are the most striking and remarkable hairs that are found on any *Notaspis* that I am acquainted with ; some of them are as long as, and look longer than, the whole body of the creature, and the spinulation makes them look even thicker and stronger than they are. The spinules of these, and the other spinulated hairs on the Acarid, are placed at regular intervals and are not jointed to the principal rhachis of the hair but are prolongations of it ; they are placed in alternate pairs, first a pair opposite each other springing from the sides of the rhachis, then a similar pair springing from the upper and under surfaces of the rhachis, and so on alternately. Each spinule points toward the tip of the hair and a little outward (Pl. 18. figs. 8-10) ; just the tip of the hair is without spinules (Pl. 18. fig. 9). There are about 60 of these spinulated hairs on the notogaster ; four are arranged in a transverse curved row near the cephalothorax ; seven, of which one is central, in a similar row a little further back ; then two rows of eight each ; and there are several, less regularly placed, on the posterior part of the notogaster ; the remainder are round the periphery.

Ventral surface without markings ; the epimera are small and do not nearly reach the median line, those of the second pair of legs are the longest ; there

are not any to the fourth pair, they are all separate. There is not any sternum. Genital plates small and squarish, but curved anteriorly, placed between the coxæ of the fourth pair of legs; anal plates larger, more diamond-shaped, and near the posterior margin. There is a transverse row of six moderate-sized, finely pectinated hairs behind them.

Habitat. Four specimens from Mr. J. W. Baker's collection, New Zealand.

NOTASPIS CAUDATA *, sp. n. (Pl. 19. figs. 11 & 12.)

Average length	. . . . .	about	·65 mm.
„ breadth	. . . . .	„	·45 „
„ length of legs, 1st pair	. . . . .	„	·35 „
„ „ „ 2nd „	. . . . .	„	·30 „
„ „ „ 3rd „	. . . . .	„	·42 „
„ „ „ 4th „	. . . . .	„	·50 „

Colour lightish chestnut-brown.

Texture highly polished.

Cephalothorax roughly conical; broad in consequence of the width of the chitinized shelf which bears the two anterior pairs of legs; it is however slightly narrowed on the ventral surface where it joins the abdomen. Rostrum rounded at the tip; it bears two pairs of rostral hairs, the upper of which are the thicker and rather the longer. Lamellæ narrow, straight blades on edge, about half the length of the cephalothorax; not much nearer together at their anterior than at their posterior ends. No cusps. Translamella a mere thickened line, except at the ends, where it adjoins the lamellæ and where the chitin is thicker and darker. Lamellar hairs long and fine, passing the tip of the rostrum by nearly half their length; inter-lamellar hairs very similar, but standing upright. Pseudo-stigmatic organs minute globes on very short peduncles, so short that no part of the organ reaches the dorsal level.

Legs of moderate length; the first pair pass the tip of the rostrum by about the length of their three distal joints, the fourth pair pass the tip of the caudal projection of the abdomen by about half the length of the tarsi; the tibiæ are the longest joints, but in the fourth pair of legs the tarsi are nearly as long. Claws tridactyle, almost, but not quite, homodactyle.

Abdomen about a third longer than its width; it is slightly truncated anteriorly, but posteriorly is prolonged so as to form a short, conical, tail-like, central projection which is the principal characteristic of the species; it is very unusual in the Orobatiidæ; it arises solely from the dorsal plate, the ventral plate is not prolonged. The abdomen is strongly curved laterally and is arched on the dorsal surface, but not so strongly as in many species of the genus. It has not any hairs or markings on the notogaster. The

* *Caudatus*, tailed.

female when distended with eggs is rounder and more arched than is shown in the drawing.

Ventral surface without hairs or markings ; the epimera of the first pair of legs do not nearly reach the median line ; those of the second pair are joined to the thickened margin of the genital opening, which is broader than long, somewhat curved anteriorly, and with almost square posterior angles ; it is placed between the third and fourth pairs of legs. The anal opening almost reaches the posterior margin of the ventral plate ; it is longer than the genital opening, curved anteriorly, and has curved lateral margins meeting in a rounded point posteriorly.

Habitat. Six specimens from Mr. Steele's and Mr. Baker's collections.

HERMANNIA PHYLLOPHORA *, sp. n. (Pl. 20. figs. 17-23.)

Length	. . . . .	about	·97 mm.
Breadth	. . . . .	"	·63 "
Length of legs, 1st pair	. . . . .	"	·56 "
"	" 2nd "	"	·48 "
"	" 3rd "	"	·57 "
"	" 4th "	"	·72 "

I regret to say that I have been forced to describe and draw this remarkable species from a single specimen, which I am always unwilling to do ; but I had only one, and the creature seemed to me too interesting to be omitted. My specimen is a female.

Colour dark chitinous brown.

Texture smooth, but not polished.

Cephalothorax large, both in length and breadth ; it is slightly bent down, which makes it look shorter than it is, as in the drawing ; it is a good deal arched, especially the central portion of the posterior third which forms a semi-lunar elevation the antero-lateral edge of which is bordered on each side by a short curved ridge springing from the outer anterior edge of the pseudo-stigma. The pseudo-stigma itself is oval, with a sharpish point at the place nearest to the median line of the body. Pseudo-stigmatic organs long, filiform, curving slightly forward toward their distal ends. Rostrum rather small, rounded ; rostral hairs short, fine, curved. No lamellar or inter-lamellar hairs visible in my specimen ; but with a single specimen, although I can say that all the hairs and details described or drawn are present, yet I cannot be equally sure that there may not be others which my specimen has lost.

Legs rather long for the genus, the first pair pass the tip of the rostrum by more than the length of the three distal joints ; the fourth pair pass the

* φύλλον, a leaf ; φέρω, I carry.

posterior margin by a little more than the length of their tarsi only. The femora and tarsi are the longest joints, each about as long as the two intermediate joints. The femora, genuals, and tibiae are broad and flattened; the femora of the two anterior pairs of legs have irregular, rough, narrow blades on their inner edges; those of the third and fourth pairs are without blades and have a flattened surface fitting against the side of the abdomen but are rounded exteriorly. All the femora are finely and irregularly reticulated in parts, particularly on the under side. The genuals of the same legs have rough blades on their inner edges. The tarsi are not flattened, and are much narrower than the other joints; the coxæ of the first and second legs are wholly sunk in the body, those of the third and fourth legs are conspicuous, and are approximately like a quarter of a globe in form, but are rough; like the femora of all the legs, they are inserted by comparatively narrow short peduncles turned at an angle to the joint itself. Claws large and monodactyle. The legs bear a number of large and small, semi-transparent leaf-like hairs or scales on their edges, viz., two on the outer edge of each femur and one on the inner edge of each of those of the first two pairs, one on the outer edge of each genual and tibia except the first pair. There are fine hairs on the tarsi and the usual tactile hair on each tibia of the first two pairs, and a few other fine and filamentous hairs.

The second leg, on each side, is inserted into the posterior part of a chitinous lateral projection of the cephalothorax which is bi-dentate on its anterior edge; the third into an indistinct flattened projection, and the fourth into the posterior edge of a large chitinous projection from the side of the abdomen; this projection has a rounded indentation in the centre of its outward edge, into which indentation the inner posterior corner of the coxa of the third leg falls.

Abdomen oval, rounded both on its anterior and posterior margins and considerably arched on the notogaster; which does not bear any markings, but there are on it, in my specimen, five pairs of minute dots from which very small hairs, probably leaf-like, have apparently fallen; I am also inclined to think there has been a pair of small leaf-like hairs on the anterior margin. From the central portion of the hind margin of the abdomen springs a broad, but very shallow, chitinous projection which bears three small, transparent, fan-shaped scales, or hairs, close together, they project over the posterior margin; there is also another pair of these hairs or scales on the notogaster itself overhanging the outer scales of the three above described.

Ventral surface without markings; mouth-opening small and contracted by the pinching inward of the hood of the rostrum; maxillary lip pointed anteriorly. Sternum present but rather vague in outline, it being difficult to say where it ceases. The epimera of the first and second legs are joined to the sternum, those of the third and fourth legs are joined to one another by a cross-piece, and to those of the second and the end of the sternum by another cross-piece. There is a vague, elevated, transverse ridge almost entirely

across the ventral plate anterior to the genital opening; which is large, nearly square, and placed between the coxæ of the fourth pair of legs. The genital plates bear double rows of small fine hairs on their inner edges. Anal opening almost touching the genital and also almost reaching the posterior margin; much longer than broad, the sides curved.

Habitat. A single specimen from moss on the Ruahine Range, New Zealand (J. W. Baker's collection).

NOTHRUS COPHINARIUS *, sp. n. (Pl. 19. figs. 13-16.)

Average length	about 1·15 mm.
„ breadth	„ 50 „
„ breadth of notogaster only	„ 45 „
„ length of legs, 1st pair	„ 85 „
„ „ „ 2nd „	„ 55 „
„ „ „ 3rd „	„ 60 „
„ „ „ 4th „	„ 85 „

Colour yellow-brown of medium depth.

Texture dull; slightly, but not conspicuously, rough; chitin thin and slightly translucent.

Cephalothorax about one-third of the length of the abdomen. Rostrum truncated at the tip, but rather narrow. Rostral hairs short and small, but rather thick; inserted nearly at the antero-lateral angle of the rostrum. A large, chitinous, cylindrical apophysis, nearly, but not quite, half as long as the cephalothorax, springs from the edge just behind the rostrum; it is thickest where it springs, and bears a long hair at its distal end; this hair is thick where it arises, but gradually diminishes; it curves strongly inward, the hairs from the two sides of the body cross. The two apophyses are joined by a thickened ridge. The cephalothorax is deeply indented at the side for the insertion of the first and second legs, which come almost to the dorsal surface. The insertions, especially of the first leg, are protected by curved knife-like ridges arising from the body and overlapping the coxæ. The pseudo-stigmata are circular openings on the dorsal surface surrounded by a slight rough ridge. Pseudo-stigmatic organs small and globular, *entirely sunk inside the pseudo-stigmata*, so that no peduncle is seen. The two pseudo-stigmata are joined posteriorly by a slight, irregular, rough, curved ridge.

Legs flattened, longish; the fourth pair pass the hind margin by about two-thirds of the length of the tarsi; the femora and tarsi are the two longest joints; the genuals and tibiæ of about equal length; the tarsus is as long as, or longer than, the genual and tibia together. All the legs are bordered on the

* *Cophinarius*, a basket maker (from the form of the interlacing spines near the posterior end).

outer edge by a series of chitinous tubercles similar to those on the cephalothorax above described, but very much smaller; they bear hairs at their distal ends, like those of the cephalothorax, but much shorter and smaller. These tubercles and hairs are on the outer edges of all the joints except the coxæ of the 1st, 2nd, and 4th legs and the tarsi of the 3rd and 4th legs; they also are found, very small in size, on the inner edges of the femora, genuals, and tibiæ; they vary very much in number on the different joints, thus there are five on the outer edge of the femur of the second leg and only one on that of the genual of the same leg; they also vary very much in size, the largest are on the outside of the coxa of the third leg. Each leg is terminated by a very small and weak triple claw, about 0.35 mm. in length. The third and fourth legs spring from projections of the underside of the abdomen; that supporting the third leg bears a large apophysis.

Abdomen not quite twice as long as its greatest width; its anterior edge straight except a shallow, rectangular, median indentation. The width gradually increases from the anterior margin backward for about two-thirds of its length, in this part the lateral margins are slightly convex; then it rapidly narrows to the posterior margin, the lateral margins of this portion are concave. The hind margin is strongly concave. The notogaster is rather narrow and is partly embraced by the chitinous plates of the side of the abdomen; these bulge out below the notogaster so that the abdomen is wider midway between the dorsal and ventral surfaces than it is on the actual dorsal surface. At each postero-lateral angle of the notogaster is a large apophysis, similar to those on the cephalothorax, but larger; it turns slightly outward near its distal end, which bears a thick hair not quite as long as the apophysis and a little curved (Pl. 19. fig. 16). On the lateral margin, on each side of the body, and almost touching the last-mentioned apophysis, is another apophysis, similar but only about a third of the length, and there is another a little further forward on the lateral margin. These three apophyses are usually within small membranous-looking sacs which are really the cast skins of the similarly-placed apophyses of the fully-grown nymph; each bears the terminal hair of the corresponding apophysis of the nymph. As the nymphal apophyses and hairs are much larger than those of the adult each of these apophyses of the adult appears to be in a pointed, or nearly pointed, semi-transparent sac, which bears a hair much larger, thicker, and more curved than that of the adult; these hairs are directed backward, but are strongly curved; each hair crosses those posterior to itself, and thus forms the singular structure depicted in Pl. 19. figs. 13-14, which is drawn from a creature carrying the cast skins. There is a fourth apophysis further forward and a fifth immediately below that at the postero-lateral corner, and hidden by it when seen from the dorsal side.

Ventral surface. Maxillary lip practically covering the whole mouth-opening. Epimera not reaching the median line but nearer together where

they approach closest to it than at the lateral margin. Genital opening large and almost round, but truncated at the posterior end; its anterior end is opposite about the centres of the coxæ of the fourth pair of legs. Anal opening large, only divided from the genital by a thick chitinous ridge; it is almost triangular, but has curved sides, convex outward. The anal plates are long and narrow, and there is a second pair of chitinous sclerites resembling them nearer the lateral edge of, but still within, the anal opening. There is a division of, or split in the chitin of, the ventral surface running from the coxa of the fourth leg to the antero-lateral corner of the anal opening on each side of the body.

Nymph. This stage would easily be recognized from the adult; it is of course far less chitinized and has monodactyle claws. It has the apophyses on the edge of the notogaster much lighter and less chitinized, but also much larger and longer than those of the adult, and the hairs which they bear are much longer; there are also three additional pairs of these apophyses and hairs along the anterior part of the lateral edges of the notogaster, which make the nymph somewhat resemble the European species *Nothrus spiniger*.

Habitat. Several specimens from the Ruahine Range, Fielding, and Maunga Karetu.

NOTHRUS UNGUIFERA *, sp. n.

Average length	. . . . .	about	1.35 mm.
„ breadth	. . . . .	„	.75 „
„ breadth of notogaster only	. . . . .	„	.45 „
„ length of legs, 1st pair	. . . . .	„	1.15 „
„ „ „ 2nd	„	„	1.0 „
„ „ „ 3rd	„	„	1.5 „
„ „ „ 4th	„	„	1.4 „

This species so closely resembles *N. cophinarius* that it may easily be mistaken for it, and it seems unnecessary to fully describe it; the principal differences from *N. cophinarius* are:—

1. The greater length of the body.
2. The smaller comparative breadth of the notogaster only, and the greater bulging of the side of the abdomen.
3. The fact that the posterior part of the lateral edge of the abdomen is convex, not concave.
4. That the notogaster is divided into three longitudinal strips of which the median is as wide as the two lateral and is plain, while the two lateral are strongly dotted or granular.
5. That the apophysis at the postero-lateral angle of the notogaster is much smaller and is slightly bulbous at the distal end, and that the adjoining one is attached to it, and that there are not any other apophyses on the notogaster.

* *Unquis*, a claw; *fero*, I bear.

6. That the tridactyle, homodactyle claws are twice the size, .075 mm. instead of .035 mm. (whence the name).

7. The greater lengths of the legs, especially the tarsi.

Habitat. Three specimens from Maunga Karetu and Fielding.

GAMASIDÆ.

TRACHYNOTUS SCLEROPHYLLUS *, sp. n. (Pl. 21. fig. 25 & Pl. 17. fig. 4.)

Length . . . . .	.93 mm.
Breadth . . . . .	.58 „
Length of legs, 1st and 2nd pairs . . .	.70 „
„ „ 3rd pair . . . . .	.62 „
„ „ 4th „ . . . . .	.78 „

These measurements, and the following description and the figures are unfortunately taken from a single specimen, a female, which is the only one I possess.

Colour. Dull chitinous brown of medium depth.

Texture. Rough and unpolished.

Body almost pentagonal in general outline, but not equal-sided; the sides and base are curved, the sides more so than the base. No demarcation between cephalothorax and abdomen. Rostrum (capitulum) small, about one-seventh of the whole body, flattened, pentagonal, equilateral but not equal-sided, the base forms the posterior margin and is nearly straight; the two sides comparatively long and very slightly concave, the two anterior faces short, approaching rapidly, and meeting in a point. Palpi with the two distal joints passing the tip of the rostrum. Mandibles with very small chelæ (but I have not got those of the ♂). The greater part of the dorsal surface is covered by two strongly reticulated, probably perforated, chitinous plates, which in character resemble those of *Tingis* (Hemiptera). The anterior of these plates is much the larger, occupying over four-sevenths of the entire length and about two-thirds of the width of the creature; it has a raised central portion commencing about opposite the insertions of the third pair of legs, and extending backward in the median line until about one-eighth of the length of the plate from the posterior margin of the plate; the raised part becomes broader and more raised as it extends backward, and ends suddenly with a convex posterior edge; the median portion of this raised part is marked off by an irregular, wavy, chitinous rib, like those forming the reticulations; within this rib the surface is smooth and dull, without reticulations; the part outside the rib is reticulated like the remainder of the plate. Outside the raised central part, both laterally and posteriorly, is a somewhat depressed area; then the lateral and posterior margins of the plate

* σκληρός, hard; φύλλον, a leaf.

curve upward again and have a raised edge. The reticulations vary in size and shape ; a certain amount of bi-lateral symmetry may be traced in the larger reticulations, the smaller are wholly irregular. The smaller plate is posterior to the larger and is only divided from it by a narrow line ; it measures less than one-eighth of what the larger does in an antero-posterior direction, but is nearly as wide anteriorly as the posterior margin of the larger plate ; it narrows considerably towards its posterior margin ; the reticulations of this plate do not vary much in size or form ; they are round, or nearly round holes, but are irregularly placed.

Beyond the plates, both laterally and posteriorly, is a broad band of flexible cuticle not strongly chitinized, but striated with very fine and close, wavy, irregular wrinkles.

Along the lateral edges of the body, commencing about over the insertions of the third pair of legs and extending to the posterior margin, is a series of processes which form the most striking feature of the species : they are evidently modifications of the expanded, leaf-like hairs, or scales, which are found upon so many of the more remarkable Acarina ; but instead of being transparent and flexible, like the wing of a Bee, in the present species they are strongly chitinized, stiff, and almost opaque. There are about ten of these modified scales along each side of the body. There is bilateral symmetry between the corresponding scales on the two sides of the body, but there is great variety between the various pairs of scales ; they have a tendency to be larger as they get further back on the body ; but the posterior pair, which are at the corners of the posterior margin, are much the largest, and are fully one-third the length of the entire creature ; they face laterally and are strongly convex outward, indeed very few of the scales are flat. Four much narrower and more spine-like hairs, but still of a similar character, are placed some way within the posterior margin, very near the edge of the posterior reticulated plate.

Ventral surface. Legs set very close together longitudinally, their coxæ nearly touching at their insertions into the body. Genital aperture of ♀ large, placed between the coxæ of the three posterior pairs of legs, almost elliptical, but slightly narrower anteriorly than posteriorly ; there is a thin band-like projection of the anterior edge of the epigynum extending nearly its whole width. The anus is placed on a hemispherical projection of the ventral surface. The space between the coxæ is smooth, that posterior to the fourth coxæ is reticulated ; the reticulations run into lines which diverge round the anus. On each side of the anus, but some little distance from it, is a pair of rather long-shaped chitinized scales, like some of those at the edge of the body.

Legs of moderate length, inserted near the edge of the body ; the first pair pass the tip of the rostrum by about the length of their four distal joints ; this pair are wholly tactile, and have the tarsi very thin and terminated by a long tactile hair without any claw. The various joints of the legs, except

the tarsi, are rough and irregular in form, with numerous strong chitinous knobs and projections, and a tendency to thick, rough, irregular blades on their outer edges; these are carried to the greatest extent on the third and fourth joints of the first pair of legs. There are short, stout, chitinous spines on most of the joints except the tarsi, and a few fine hairs on the tarsi.

Habitat. A single specimen from the Ruahine Range.

TRACHYNOTUS FIMBRIATIPES *, sp. n. (Pl. 21. figs. 26-28 & Pl. 20. fig. 24.)

Length	about	·75 mm.
Breadth	„	·45 „
Length of legs, 1st pair	„	·46 „
„ „ 2nd „	„	·35 „
„ „ 3rd „	„	·28 „

These measurements, and the following description and the figures, are unfortunately taken from a single specimen, a female, which is the only one I possess.

Colour lightish brown, almost bay.

Texture unpolished, mostly rough.

Body approaching a long elliptical form, but very irregular; the anterior margin formed of two bisymmetrical, very shallow concavities meeting in a slight central point and having their lateral points somewhat projecting. No demarcation between cephalothorax and abdomen. Rostrum almost entirely hidden, from above, by the projecting dorsal plate and the fimbriated margins of the front pair of legs; but about the four distal joints of the palpi show from the dorsal aspect, and a small central portion of the epistome also shows when the rostrum is held horizontally. Mandibles (of ♀) very slender. A broad irregular band of smooth, but not polished, chitin occupies the whole median part of the dorsum from the anterior margin until within one-tenth of its length from the posterior margin. This smooth band is composed of thin chitin, and is slightly sunk as compared with the remainder of the dorsum, but is itself a little convex; at about one-tenth of the length of the dorsum from the anterior margin this smooth band sends off a short spoon-shaped branch directed backward and laterally at an angle of about 45°. The band itself is somewhat widened near its anterior and posterior ends. There is also a narrow smooth space round the lateral and posterior margins, commencing just behind the second pair of legs; the irregular form of this space is best seen from the drawing. The posterior margin of this space bears six bisymmetrical pairs of thick curved hairs on its outer edge, each hair mounted on a small papilla, and there are two pairs of smaller, but otherwise similar, hairs a little distance from the edge. The whole of the remainder of the dorsal surface is covered with a chitinous plate so closely and irregularly pierced with holes of from about ·009 mm. to about ·015 mm.

* *Fimbriatus*, bordered; *pes*, a foot, or leg.

that the ridges left between the holes seem to form a fine network over the inner cuticle; the ridges are really narrower in proportion to the holes than can be shown in a drawing the size of fig. 26. The chitinous plate bears one pair of thick curved hairs just where the plate is narrowest, about one-fifth of the length of the dorsum from its posterior end.

Ventral surface. Legs inserted rather nearer the median line than the lateral edge of the ventral surface; their coxæ, on each side, nearly touch longitudinally; the space between the two lines of coxæ as far as the posterior edge of the third pair, and the median portion posterior to this point, is smooth, like the median part of the dorsum, but the smooth part is wider than on the dorsum and is irregular in form. The lateral and posterior parts behind the third coxæ are covered with irregular bands and curved surfaces coarsely striated transversely. The genital opening of the ♀ is placed between the coxæ of the third and fourth legs, it is large and occupies almost the whole space; the genital plate (epigynum) which covers it is spade-shaped, straight on its posterior edge, which is the shortest, slightly increasing in width toward its anterior (distal) edge, which, as well as the lateral edges, are somewhat curved.

Legs. Of moderate length, the first pair set far forward, all joints except the coxæ passing the tip of the rostrum; the fourth pair scarcely passing the hind margin. The three posterior pairs of legs are normal; the first pair form the principal characteristic of the species, their coxæ and second joints are normal, but the other joints are extremely thin; all these thin joints, except the tarsi, are bordered, on each side, by a broad, flat, transversely striated, chitinous expansion, about twice as wide as the joints; the most distal of these expansions is the narrowest. Each tarsus of the first pair of legs is terminated by a long tactile hair, and there are a few fine hairs on the other tarsi.

Habitat. A single specimen from the Ruahine Range.

EXPLANATION OF THE PLATES.

PLATE 17.

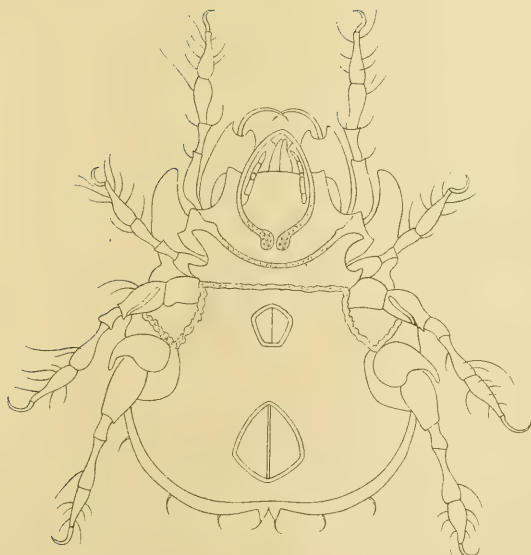
- Fig. 1. *Oribata Bostocki*, sp. n. Dorsal aspect, $\times 55$.
 2. " " Ventral aspect, $\times 55$.
 3. " " Pseudo-stigmatic organ, $\times 100$.
 4. *Trachynotus sclerophyllus*, sp. n. Ventral aspect, $\times 50$.

PLATE 18.

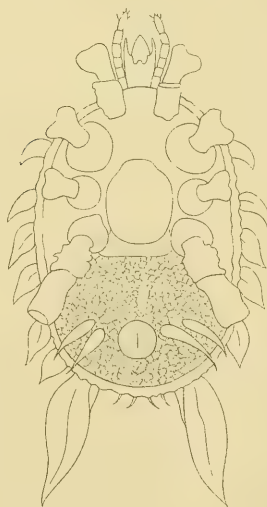
- Fig. 5. *Notaspis spinulosa*, sp. n. Dorsal aspect, $\times 55$.
 6. " " Pseudo-stigmatic organ, $\times 200$.
 7. " " Claw, $\times 200$.
 Figs. 8, 9, 10. " " Portions of the notogastral hairs (there are about 30 whorls of spines on each hair), $\times 250$.



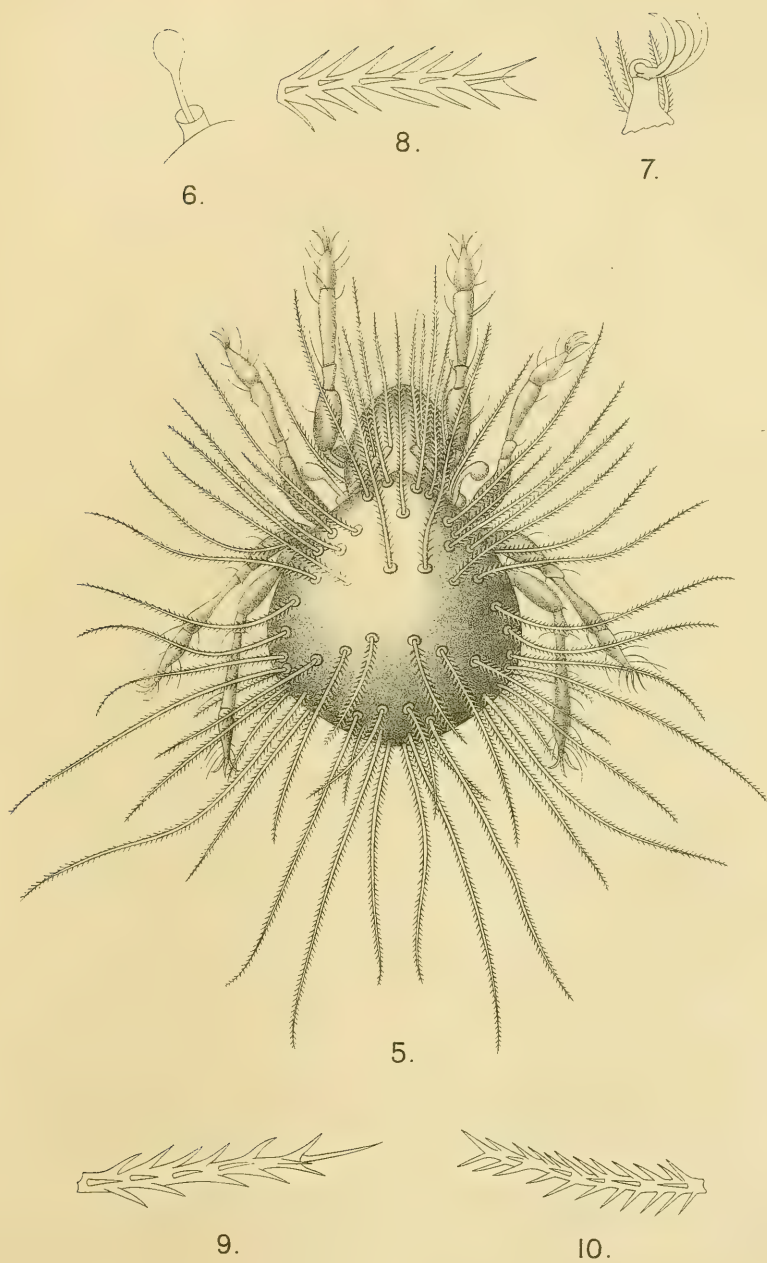
3.



2.

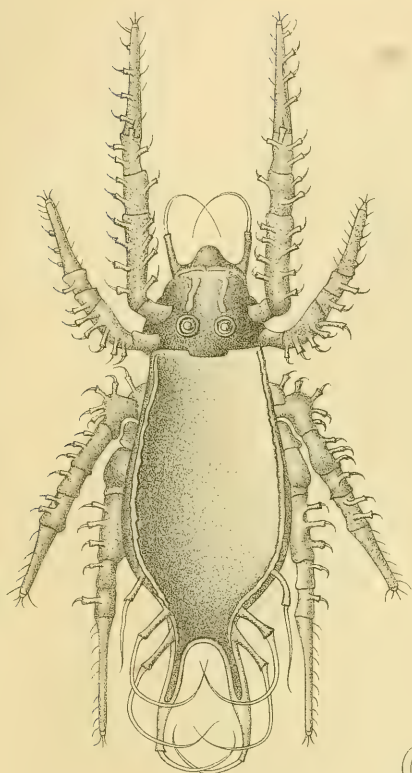


4.

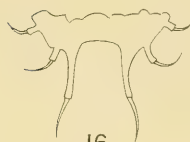


A.D.M. delt.

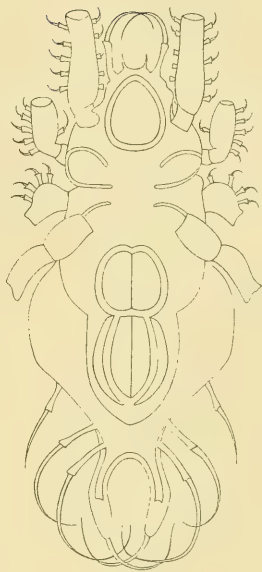
E. Wilson, lith & imp.



13.



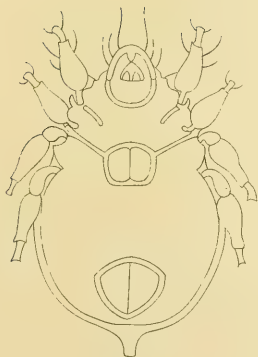
16.



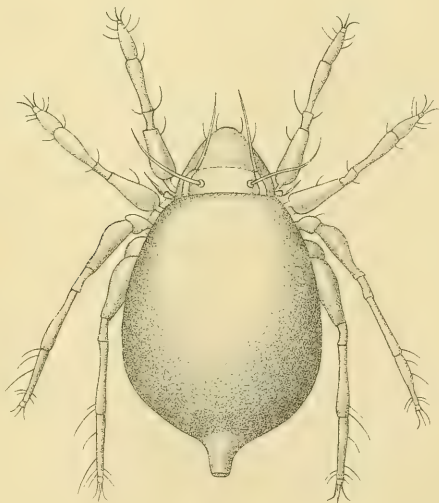
14.



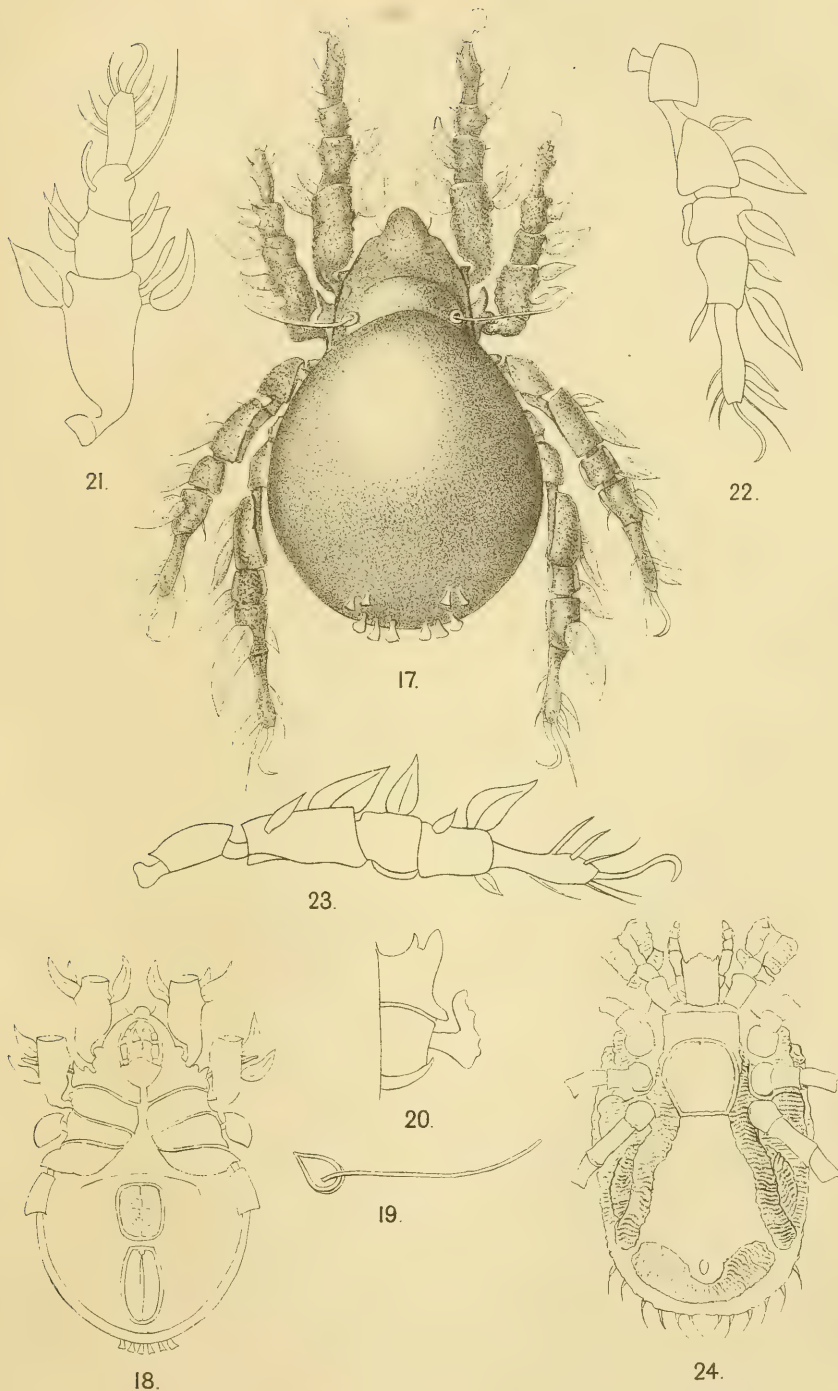
15.



12.

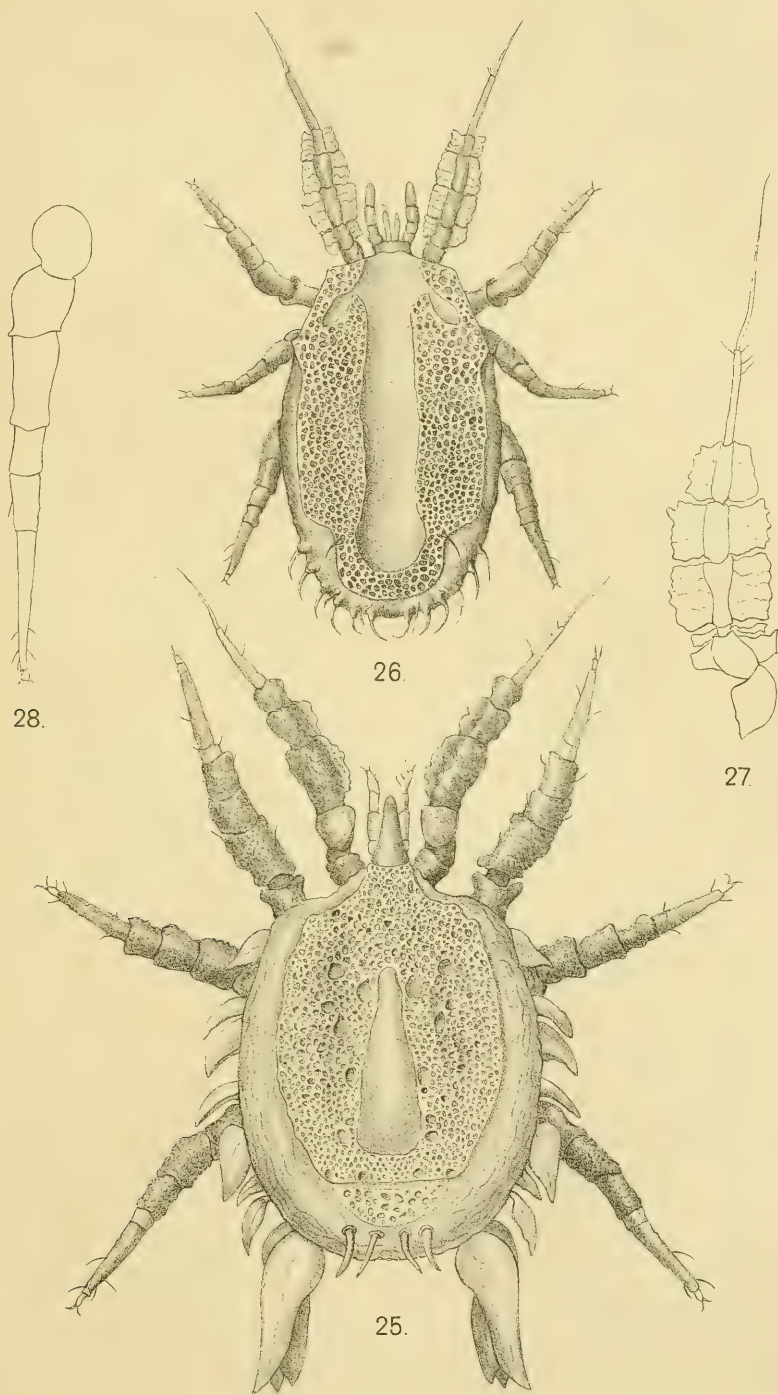


11.



A.D.M. delt.

E. Wilson, lith. & imp.



A.D.M. delt.

E. Wilson, lith. & imp.

PLATE 19.

- Fig. 11. *Notaspis caudata*, sp. n. Dorsal aspect, $\times 65$.
 12. " " Ventral aspect, $\times 60$.
 13. *Nothrus cophinarius*, sp. n. Dorsal aspect, $\times 45$.
 14. " " Ventral aspect, $\times 45$.
 15. " " Pseudo-stigmatic organ, $\times 100$.
 16. " " Posterior end of abdomen, dorsal aspect, with cast skin of Nymph removed, $\times 45$.

PLATE 20.

- Fig. 17. *Hermannia phyllophora*, sp. n. Dorsal aspect, $\times 57$.
 18. " " Ventral aspect, $\times 45$.
 19. " " Pseudo-stigmatic organ, $\times 125$.
 20. " " Chitinous lateral projections between first and second and second and third legs showing the insertion of the coxa of the second leg (right side) between the projections, $\times 125$.
 21. " " First right leg, from above, $\times 90$.
 22. " " Third right leg, from above, $\times 90$.
 23. " " Fourth right leg, from above, $\times 90$.
 24. *Trachynotus fimbriatipes*, sp. n. Ventral aspect, $\times 60$.

PLATE 21.

- Fig. 25. *Trachynotus sclerophyllus*, sp. n. Dorsal aspect, $\times 65$.
 26. *Trachynotus fimbriatipes*, sp. n. Dorsal aspect, $\times 60$.
 27. " " First left leg, from below, $\times 100$.
 28. " " Fourth right leg, from above, $\times 125$.
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